

Rice

Rice, a billion-dollar annual crop in the United States, is grown in only six States: Arkansas, California, Louisiana, Texas, Mississippi, and Missouri. Both the Southern and Western regional labs conduct research on rice. (See also "Fiber and Cholesterol," p.107.) Long-grain rice, an American favorite, is raised chiefly in the South; medium-grain and short-grain rice predominate in California, although substantial amounts of medium-grain rice are also raised in Louisiana and Arkansas. The United States is the world's second biggest rice exporting Nation; in first place is Thailand.

During the 1950's, SRRC scientists improved procedures for extracting rice bran oil. They also made changes in rice milling that resulted in less breakage of rice grains. A pilot plant built in New Orleans proved the value of the improvements, and they were quickly adopted by commercial mills. As the 1960's began, research on deep milling of rice produced a high-protein flour suitable for baby foods and special diets. A few years later, ways were found to recover small, thin rice kernels usually lost or broken during processing and to use them in a flour with several times the protein of regular rice.

Bread made with rice flour is readied for taste tests by WRRRC food technologists Kazuko D. Nashita (left) and Laura M. Beam. Taste panels reported that the bread, which can be consumed by people allergic to wheat protein, is almost indistinguishable from products containing wheat flour.



In the 1980's, New Orleans researchers doubled the shelf life of brown rice from 6 months to at least 1 year. They also found out exactly what happens inside the rice kernel when rice becomes sticky when cooked—and how to prevent this condition. Other chemical changes, they found, have a bearing on color, hardness, and fragility of stored rice. Rice companies can use this new information to track changes in rice to determine the level of stickiness under various storage conditions. Other new SRRC data will allow processors to select specific varieties of rice for specific cooking needs.

At the Western center, scientists in the 1950's increased the capacity of heated-air rice dryers in California by 48 percent without impairing the quality of the rice. The improvements actually cut drying costs. These and other innovations saved processors millions of dollars. Since three-fourths of the rice crop was handled by cooperatives, the benefits were returned directly to growers. Researchers also developed improved ways to can cooked white rice, work that later led to a still more acceptable canned product developed by university researchers in Arkansas.

During the 1970's, Western researchers developed a way to make yeast-leavened bread from rice flour, using a gum ingredient that forms a film in the rice flour dough to make it elastic like wheat gluten. The flour was used to bake bread and other items for glucose-intolerant people. Scientists also came up with a better process for making quick-cooking rice, an innovation that had already meant a 50-percent increase in U.S. per capita rice consumption. A few years later, they developed a quick-cooking brown rice that could be prepared in one-fourth the time of raw brown rice. The processed product still retained its nutritional superiority over white rice.

Recently, a WRRRC flavor chemist discovered and synthesized a chemical found in aromatic rice that imparts the fragrance of popcorn to domestic rice. Some of the world's rice crop has this natural popcorn aroma, and varieties of aromatic rice typically bring premium prices. Taste panelists judged WRRC's synthetic aroma a near match to naturally scented varieties.